By Facsimile

Amendment to the Specification

Please amend the specification paragraphs 0042 and 0050 as follows:

[0042] The classification of pixels in the region defined by the operator may be conducted in any color space. For example, in the case of a gray scale image the classification may use the original gray scale data of the image or, alternatively, a transformation of the data to another color space providing a brightness representation, for example one that is non-linear with respect to the original gray scale representation. In the case of color images it is most useful to utilize a color space with a brightness component and orthogonal chrominance components, especially those where an approximately opponent color representation is used. Examples of such color spaces include YIQ, YUV, YCbCr, YES, ATD and the like. However, regardless of the original gray scale or color representation of the image, the search for the outer boundaries of the defect is preferably conducted in a special color space. This space is a perceptual color space, meaning that the underlying mathematical description substantially represents the human perception of color. Such a color space must support, at least approximately, the concept of a just noticeable difference or minimum perceptible difference in color. This means that a distance can be defined in the color space that, for small perceived differences between two colors, substantially accords with the statistically aggregated ability of human observers to determine whether the colors are different or not and that this distance is substantially uniform throughout the color space. Such a color space has three dimensions, usually corresponding to lightness and to the chrominance of two opponent colors, or to lightness, hue and chroma, or their equivalents. The distance corresponding to a just noticeable difference in color may be defined separately along each of the axes of the color space, or as a distance along one axis coupled with a distance in an orthogonal plane or as a single distance measured within the volume of the color space. Suitable color spaces are color difference systems such as the CIE L*u*v* and CIE L*a*b* color spaces as described in G. Wyszecki and W. S. Stiles, "Color Science--Concepts and Methods, Quantitative Data and Formulae", Wiley, New York, 1982. Other color suitable color spaces are color appearance systems such as those described in M. D. Fairchild, "Color Appearance Models", Prentice-Hall, New York, 1998. Examples include: the Nayatani

color model (Y. Nayatani, Color Res. and Appl., 20, 143 (1995)); the Hunt color model (R. W. G. Hunt, Color Res. and Appl., 19, 23 (1994)); the LLAB color model (R. Luo, Proc. SPIE, 2658, 261 (1996)); the RLAB model (M. D. Fairchild, Color Res. and Appl., 21, 338 (1996)); the ZLAB model (M. D. Fairchild, Proceedings of the CIE Expert Symposium '97 on Colour Standards for Image Technology, CIE Pub. x014, 89-94 (1998)); the IPT model (F. Ebner.and M. D. Fairchild, Proc. 6th IS&T/SID Color Imaging Conf., 8 (1998)); the ATD model (S. L. Guth, Proc. SPIE, 2414, 12 (1995)); the Granger adaptation of ATD as disclosed in U.S. Pat. No. 6,005,968; and the CIECAM97s model described in CIE Pub. 131 (1998). Additional useful color spaces include those that take spatial variation of color into account, such as S-CIELAB (X. Zhang and B. A. Wandell, J. Soc. Information Display, 5, 61 (1997)). Color order systems are designed to represent significantly larger color differences than those that are just noticeable. However, they can be manipulated to provide approximations of the just noticeable difference. Examples of such color order systems include: the Munsell system (R. S. Berns and F. W. Billmeyer, Color Res. and Appl., 21, 163 (1996)); the Optical Society of America Uniform Color Scale (D. L. MacAdam, J. Opt. Soc. Am., 64, 1691 (1974)); the Swedish Natural Color System (Swedish Standard SS 0191 02 Color Atlas, Second Ed., Swedish Standards Institution, Stockholm, 1989); ~~http://www.ncscolour.com/~~ see also the website titled ncscolour.com); and the Deutches Institut fur Normung system (M. Richter and K. Witt, Color Res. and Appl., 11, 138 (1984)). Of these, the CIE L*u*v* and CIE L*a*b* color spaces are preferred since they offer sufficient accuracy in a simple implementation and are amenable to rapid color transformation from the original image space by use of a look-up table. Of these, CIE L*a*b* is especially preferred.

[0050] After they have been defined, the defect or object pixels may be corrected by any method known in the art. For example, the pixel may be replaced by the average or weighted average of pixels in its neighborhood, preferably excluding other defect pixels. The output of a top hat or rolling ball filter may also be used. Non-linear filters such as the median filter or other rank leveling filters may be employed. Adaptive filters are another alternative, such as the double window modified trimmed mean filter described in "Computer Imaging Recipes in C', H. R. Myler and A. R. Weeks, Prentice-Hall, 1993, p. 186ff. The defect may also be corrected by the use of morphological operations such as

erosion or dilation, selected on the basis of the lightness or darkness of the defect relative to its surroundings. Combinations of these operations in the form of morphological opening and closing are also possible. The defect may also be removed by interpolation such as with linear interpolation or quadratic interpolation. Other interpolation methods, for example such as the trigonometric polynomial technique described on-line by W. T. Strohmer in "A Levinson-Galerkin algorithm for trigonometric approximation" available at the front end for the mathematics arXiv website ~~http://tyche.mat.univie.ac.at/papers/inpr-ess/trigappr.html~~ titled front.math.ucdavis.edu, or the multivariate radial basis technique described on-line by H. Zatschler in "M4R Project--Radial Basis Functions" ~~at http://www.doc.ic.ac.uk/.about.hz3/m4rproject/m4rproject.html~~ (available through the website titled doc.ic.ac.uk) may also be used. Interpolation may also be accomplished by fitting a surface such as a plane or a parabola to the local intensity surface of the image. In color or multichannel images, information from a defective channel may be reconstructed using information from the remaining undamaged channels. The defect may also be repaired using the method of Hirani as described in A. N. Hirani and T. Totsuka, Proceedings of SIGGRAPH 96, 269-276 (1996). Alternatively the repair may be effected by inpainting as discussed in M. Bertalmio, G. Sapiro, V. Caselles, and C. Ballester, "Image Inpainting", Preprint 1655, Institute for Mathematics and its Applications, University of Minnesota, December 1999 or by the more recent variational method described in C. Ballester, V. Caselles, J. Verdera, M. Bertalmio and G. Sapiro, "A Variational Model for Filling-In" available on-line at ~~http://www.ceremade.dauphine.fr/reseaux/TMR-viscosit e/preprints.html~~ the website entitled ceremade.dauphine.fr. Additional techniques are described in T. F. Chan and J. Shen, "Morphology Invariant PDE Inpaintings", Computational and Applied Mathematics Report 01-15, UCLA, May 2001 and T. F. Chan and J. Shen, "Non-Texture Inpainting by Curvature-Driven Diffusions (CDD)", Computational and Applied Mathematics Report 00-35, UCLA, September 2000.